We Claim:

1. Cooked, buoyant waxy wheat comprising no more that about 10% amylose starch, characterized by being gelatinized throughout and storage stable in the absence of additives that inhibit development of rancidity.

2. Waxy wheat of claim 1, comprising a protein content of no more than about 14% by weight.

3. Waxy wheat of claim 1 in the form of integral whole kernels or ground whole kernels.

4. Waxy wheat of claim 1 wherein the waxy wheat is pearled.

5. Waxy wheat of claim 1 wherein the waxy wheat is about 1% to about 30% pearled.

6. Waxy wheat of claim 1, wherein the waxy wheat comprises a Wx-D1 null, Wx-A1 or Wx-B1 null allele.

7. Waxy wheat of claim 1 wherein said cooked, buoyant waxy wheat is storage stable for at least about six months.

8. Waxy wheat of claim 1 wherein said cooked buoyant waxy wheat is storage stable for at least about 12 months.

9. Waxy wheat of claim 1, further comprising an edible coating.

10. Waxy wheat of claim 9, wherein the coating is selected from the group consisting of sucrose, dextrose, rice syrup, carnauba wax, polymeric fructose, corn syrup solids and oil.

11. Edible composition comprising the cooked, buoyant waxy wheat of claim 1.

12. Edible composition of claim 12 selected from the group consisting of ready to eat cereals, muesli, granola grain clusters, snack bars, biscuits, crackers, bread, cakes, muffins and pie crusts.

13. Process for preparing a cooked, buoyant, waxy wheat, comprising:

(a) heating a waxy wheat having no more than about 10% amylose for about 5 to about 15 minutes at about 200°F (94°C) to 230°F (110°C) with moisture,

(b) gelatinizing the heated waxy wheat throughout, and

(c) cooling and drying the gelatinized waxy wheat,

wherein said wholegrain waxy wheat product is storage stable for at least about six months in the absence of additives that inhibit development of rancidity.

14. Process of claim 13, wherein said waxy wheat is heated for about 5 to about 10 minutes with steam and then tempering the waxy wheat for about 1 hour to about 2 hour.

15. Process of claim 14, wherein said tempering is about 1 hour at ambient temperature.

16. Process of claim 14, wherein said tempering is for about 1 hour at about 160°F (71°C) to about 200°F (93°C).

17. Process of claim 13, wherein the waxy wheat in step (b) is heated for about 45 minutes to about 90 minutes at 200°F (93°C) to about 350°F (177°C) to gelatinize the waxy wheat.

18. Process of claim 13, wherein the waxy wheat in step (b) is heated for about 1 hour at about 260°F (127°C).

19. Process of claim 13, further comprising separating the cooled waxy wheat in step (c) into separate kernels prior to drying.

20. Process of claim 19, further comprising toasting the separated dried kernels.

21. Process of claim 19, further comprising drying the separated kernels to a moisture content of 10 to 16% then heating the kernels to about 380°F (193°C) to about 700°F (371°C) for 15 to 25 seconds.

22. Process of claim 13, wherein flavorings are added to the waxy wheat prior to, during or after gelatinization.

23. Process of claim 13, wherein the waxy wheat comprises a protein content of about less than 14% by weight.

24. Process of claim 13, wherein the waxy wheat comprises Wx-D1 null, Wx-A1 or Wx-B1 null allele.

25. Process of claim 13, further comprising kneading the gelatinized and cooled waxy wheat of step (c) under low shear to form a dough.

26. Process of claim 25, further comprising shaping and drying the dough to a moisture content of 10 to 16%.

27. Process of claim 26, wherein further comprising toasting or puffing the shaped dough.

28. Process of claim 27, wherein the dried dough is puffed by heating the shaped dough to about 380°F (193°C) to about 700°F (371°C).

29. Process of claim 13, wherein the waxy wheat comprises a protein content of less than 14% by weight of the grain.

30. Process of claim 13, comprising

(a) heating the waxy wheat for 5 to 7 minutes at about 17 psi, then

(b) tempering the heated waxy wheat for about 1 hour, then

(c) cooking the tempered waxy wheat for about 1 hour to about 280°F (138°C) to gelatinize the waxy wheat, then

(d) kneading the gelatinized waxy wheat under low shear to form a dough, then

(e) shaping the dough and

(f) then drying the dough to a moisture content of about 10% to 16%.

31. Process of claim 13, further comprising puffing or toasting the dried waxy wheat of step (c).

32. Process for preparing a cooked, buoyant, waxy wheat, comprising

(a) heating a waxy wheat for about 5 to about 10 minutes with steam,

(b) then tempering the heated waxy wheat for about 1 to about 2 hours,

(c) cooking the tempered waxy wheat for about 45 minutes to about 90 minutes at 200°F (93°C) to about 350°F (177°C) to gelatinize the wholegrain waxy wheat throughout,

(d) cooling and separating the gelatinized wholegrain waxy wheat, and then

(e) drying the separated wholegrain waxy wheat to a moisture content of about 10% to 16%.

33. Process of claim 32, further comprising puffing or toasting the wholegrain waxy wheat of step (e).

34. Cooked, buoyant, waxy wheat produced by the process of claim 13.

35. Cooked, buoyant, waxy wheat produced by the process of claim 32.

36. Process of claim 13, wherein the waxy wheat of step (a) is milled after heating and prior to gelatinizing to produce a ground meal.

37. Process of claim 36, further comprising shaping the gelatinized ground meal and drying to a moisture content of about 10% to 16%.

38. Process of claim 36, wherein the ground meal is gelatinized in a a rotary cooker or a cooker-extruder having a die face.

39. Process of claim 36, further comprising extruding the gelatinized ground meal and forming the extruded ground meal into a product of a desired shape.

40. Process of claim 39, further comprising toasting or puffing said shaped product.

41. Process of claim 39, wherein the shaped product is puffed by heating to about 380°F (193°C) to about 700°F (371°C).

42. Process of claim 36, wherein the ground meal is gelatinized in a cooker-extruder and directly expanded.

43. Process of claim 13, further comprising milling the gelatinized barley of step (c) to produce a ground meal.

44. Process of claim 43, wherein said ground meal is formed into a product having a desired shape.

45. Process of claim 44, wherein the shaped product is a flake, shred, puff, nugget, strip or chip.

46. Process of claim 44, wherein the shaped product is toasted or puffed.

47. Process of claim 44, wherein the shaped product is dried to a moisture content of about 10% to 16%.

48. Process of claim 44, further comprising toasting or puffing the dried shaped product.

49. Process of claim 13, wherein the waxy wheat in step (c) is bumped, flaked, puffed or toasted.

50. Process of claim 13, wherein the waxy wheat is gelatinized in a cooker-extruder having a die face and is directly expanded at the die face.

51. Process of claim 50, wherein the directly expanded gelatinized waxy wheat is toasted.